WHAT IS CLAIMED IS:

1. A grinder with fast installable/detachable grinding disc, comprising:

a main body in which a driving device is installed;

a rotary switch mounted on the main body and manually operable to change position of the rotary switch;

a linking device mounted at bottom end of the main body and drivable by the rotary switch, whereby by means of operating the rotary switch, the linking device is driven to move between an expanded position and a closed position;

a rotary shaft, bottom end of the rotary shaft being recessed to form a shaft hole, the rotary shaft being disposed at bottom end of the driving device and drivable by the driving device to rotate; and

a detent mechanism mounted in the rotary shaft, the detent mechanism having at least one detent member which is displaceable along the radius of the rotary shaft, an inner end of the detent member being formed with an engaging section, whereby when operating the rotary switch to drive and move the linking device between the expanded position and the closed position, the detent member is displaced to move the engaging section into or out of

the shaft hole of the rotary shaft.

2. The grinder as claimed in claim 1, wherein the detent mechanism further includes at least one operating member disposed in the rotary shaft and displaceable along the radius of the rotary shaft, an inner end of the operating member serving to drive the detent member, whereby when the linking device is displaced between the expanded position and the closed position, the detent member is driven by the operating member to displace.

3. The grinder as claimed in claim 2, wherein the detent mechanism further includes a resilient member disposed between the operating member and the rotary shaft, the resilient member serving to resiliently keep the operating member in an outer dead end where an outer end of the operating member protrudes from the rotary shaft, when the linking device is positioned in the closed position, the linking device presses the outer end of the operating member to make the operating member move into the rotary shaft, whereby the detent member is driven by the operating member to move the engaging section out of the shaft hole, when the linking device is positioned in the expanded position, the operating member being not driven by the linking device and being positioned in the outer dead end, whereby the engaging section of the detent member is moved into the shaft hole.

4. The grinder as claimed in claim 3, wherein:

a first slide way is formed at the bottom end of the rotary shaft along the radius thereof, the first slide way communicating with the shaft hole, at least one second slide ways being formed at the bottom end of the rotary shaft, the second slide way intersecting the first slide way by a large angle;

the detent member is disposed in the first slide way and displaceable along the first slide way; and

the operating member has a body section and at least one leg section outward extending from the body section, the leg section being disposed in the second slide way, whereby the operating member can be displaced along the second slide way, the leg section being drivingly connected with the detent member, whereby when the operating member is positioned in the outer dead end, the body section protrudes from the rotary shaft and when the operating member is displaced, the leg section drives the detent member to displace.

5. The grinder as claimed in claim 4, wherein an inner and an outer sides of the leg section of the operating member are respectively formed with an inner and an outer push sections, the inner and outer ends of the detent member being respectively formed with an inner and an outer thrust sections on one plane, the two thrust sections being spaced from each other by a certain distance, the leg section of the operating member passing through a space between the inner and outer thrust sections, whereby when the

operating member is positioned in the outer dead end, the outer push section is coupled with the outer thrust section to move the engaging section of the detent member into the shaft hole, when the operating member is moved into the rotary shaft, the inner thrust section being coupled with the inner push section to move the engaging section of the detent member out of the shaft hole.

6. The grinder as claimed in claim 4, wherein two second slide ways are formed at the bottom end of the rotary shaft, the detent mechanism having two detent members and one operating member, the two detent members being disposed in the first slide way on two sides of the shaft hole, two leg sections outward extending from the same side of the body section of the operating member, the two leg sections being respectively disposed in the two second slide ways to engage with the two detent members.

7. The grinder as claimed in claim 4, wherein the bottom end of the rotary shaft is formed with a recessed section, the body section of the operating member being positioned in the recessed section.

8. The grinder as claimed in claim 1, wherein the linking device has an interior void section in which the rotary shaft is positioned.

9. The grinder as claimed in claim 8, wherein the linking device includes at least two push plates slidable along the radius of

the rotary shaft, whereby when the linking device is positioned in the closed position, the push plates are inward displaced, while when the linking device is positioned in the expanded position, the push plates are outward displaced to move the inner ends of the push plates away from each other, whereby by means of the displacement of the push plates, the detent members of the detent mechanism are operated.

10. The grinder as claimed in claim 1, wherein the main body includes a hollow annular body, an inner circumference of the annular body having a predetermined number of connecting sections arranged at equal intervals for connecting with the bottom end of the main body, the connecting sections defining therebetween hollow sections the number of which is equal to the number of the connecting sections, the rotary switch being disposed around the annular body, the linking device being disposed in the annular body and connected with the rotary switch through the hollow sections, whereby the rotary switch can drive the linking device.

11. The grinder as claimed in claim 10, wherein the linking device includes:

a bracket having a hollow disc-shaped body section, a predetermined number of oblique guide slots being formed on the body section at certain intervals, the bracket being connected with the rotary switch through the hollow sections;

a support tray which is also a hollow tray body, rail channels being formed on top face of the support tray at equal intervals, the number of the rail channels being equal to the number of the guide slots, the longitudinal length of the rail channel being parallel to the radius of the support tray; and

push plates the number of which is equal to the number of the rail channels, a guide post being disposed on each push plate, the push plates being respectively disposed in the rail channels and slidable along the rail channels, the support tray being fixedly connected with the bottom face of the annular body, the support tray and the push plates being attached to the bottom face of the body section of the bracket, the guide posts of the push plates respectively extending into the guide slots, the interiors of the support tray and the bracket serving as the void section, whereby when rotating the bracket, via the guide slots, the guide posts are guided to drive and displace the push plates.

12. The grinder as claimed in claim 11, wherein a predetermined number of leg supports are arranged on the body section of the bracket at certain intervals, the leg supports upward extending from the body section and respectively extending through the hollow sections to connect with the rotary switch.

13. The grinder as claimed in claim 10, wherein the rotary switch has an annular configuration and is fitted around the annular body.

14.The grinder as claimed in claim 13, wherein the rotary switch is composed of at least two arched bodies.

15.The grinder as claimed in claim 1, further comprising an insurance mechanism disposed between the rotary switch and the main body, the insurance mechanism being displaceable between a latched position and a released position, whereby when the insurance mechanism is positioned in the latched position, the rotary switch cannot be rotated, while when the insurance mechanism is positioned in the released position, the rotary switch can be rotated.

16.The grinder as claimed in claim 10, further comprising an insurance mechanism disposed between the rotary switch and the annular body, the insurance mechanism being displaceable between a latched position and a released position, whereby when the insurance mechanism is positioned in the latched position, the rotary switch is engaged with the annular body and cannot be rotated, while when the insurance mechanism is positioned in the released position, the rotary switch is disengaged from the annular body.

17.The grinder as claimed in claim 16, wherein the insurance mechanism is an insurance switch which is pivotally connected with the rotary switch and displaceable, one end of the insurance switch having a stopper section, whereby when the insurance switch is positioned in the latched position, the stopper section

extends into a hollow section of the annular body to abut against a connecting section, while when the insurance switch is positioned in the released position, the stopper section is moved out of the hollow section.

18. The grinder as claimed in claim 17, further comprising a resilient member disposed between the insurance switch and the rotary switch, whereby in normal state, the resilient member serves to resiliently keep the stopper section of the insurance switch in a hollow section.

19. The grinder as claimed in claim 17, wherein the rotary switch is formed with a hollow section in which the insurance switch is pivotally disposed.

20. The grinder as claimed in claim 1, wherein a predetermined number of locating sections are disposed on the circumference of the main body and inner circumference of the rotary switch is formed with a predetermined number of engaging sections for engaging with the locating sections.